



UNITED STATES MARINE CORPS

MARINE CORPS AIR STATION MIRAMAR
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20 MAY 2002

STATION ORDER P13810.1

From: Commanding General
To: Distribution List

Subj: STANDING OPERATING PROCEDURES FOR THE AIRCRAFT RECOVERY
DIVISION (SHORT TITLE: SOP FOR AIRCRAFT RECOVERY DIVISION)

Ref: (a) OPNAV 4790.4
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(i) StaO P3710.1
(j) StaO 3140.1

Encl: (1) LOCATOR SHEET

Report Required: Runway Arresting Gear Engagement Report
(Report Symbol NAVAIR 13810-3)

1. Purpose. To establish Standing Operating Procedures (SOP) for the Aircraft Recovery Division and publish information pertaining to the Emergency Arresting Gear and Optical Landing Systems at Marine Corps Air Station (MCAS) Miramar per the references.
2. Information. The Aircraft Recovery Division SOP is published for guidance in the conduct of operations and maintenance of all Aircraft Recovery equipment. The reference establishes the basic operations, maintenance and safety procedures to be followed by Recovery personnel operating aircraft arresting gear and optical landing aids.
3. Summary of Revision. This Manual is the first Recovery SOP for MCAS Miramar and should be reviewed in its entirety to ensure concurrence.
4. Action. The Airfield Operations Officer will establish and maintain Aircraft Recovery capabilities per policies and procedures established herein. Due to the critical nature of the Recovery Branch's responsibilities, the Station Motor Transportation Maintenance Officer shall ensure that the highest priority is assigned to the repair of Recovery vehicles and related support equipment. The Commanding Officer, Headquarters and Headquarters Squadron (HQHQRON) will ensure that the

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personnel manning level of the Recovery Branch is maintained per minimum response criteria outlined in the references. All Marines reporting for duty with the Aircraft Recovery Division will read and comply with this directive in the performance of their duties.

5. Certification. Reviewed and approved this date.

A handwritten signature in black ink, appearing to read "G. L. Goodman", written in a cursive style.

G. L. GOODMAN
Chief of Staff

DISTRIBUTION: A

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Location: _____
(Indicate the location(s) of the copy(ies) of this Manual.)

SOP FOR AIRCRAFT RECOVERY DIVISION

RECORD OF CHANGES

Log completed change action as indicated.

Change Number	Date of Change	Date Entered	Signature of Person Incorporating Change

SOP FOR AIRCRAFT RECOVERY DIVISION

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CHAPTER 1

MISSION AND ORGANIZATION

1000. MISSION. The mission of the Aircraft Recovery Division is to maintain and operate emergency arresting gear aboard MCAS Miramar for aborted takeoffs and emergency landings of aircraft. This mission is expanded to include the installation of all arresting gear and optical landing systems, and to incorporate all service changes.

1001. ORGANIZATION. The Aircraft Recovery Division is organized into two watch standing sections, and a day section for administration, training, and for logistics. Assignment of Marines, MOS 7011 to support the Aircraft Recovery Division mission will be provided by the AC/S, G-1 and CO HQHQRON through the participation of tenant units in accordance with the current FAP agreement between the CG 3d MAW and COMCABWEST.

SOP FOR AIRCRAFT RECOVERY DIVISION

ORGANIZATIONAL CHART

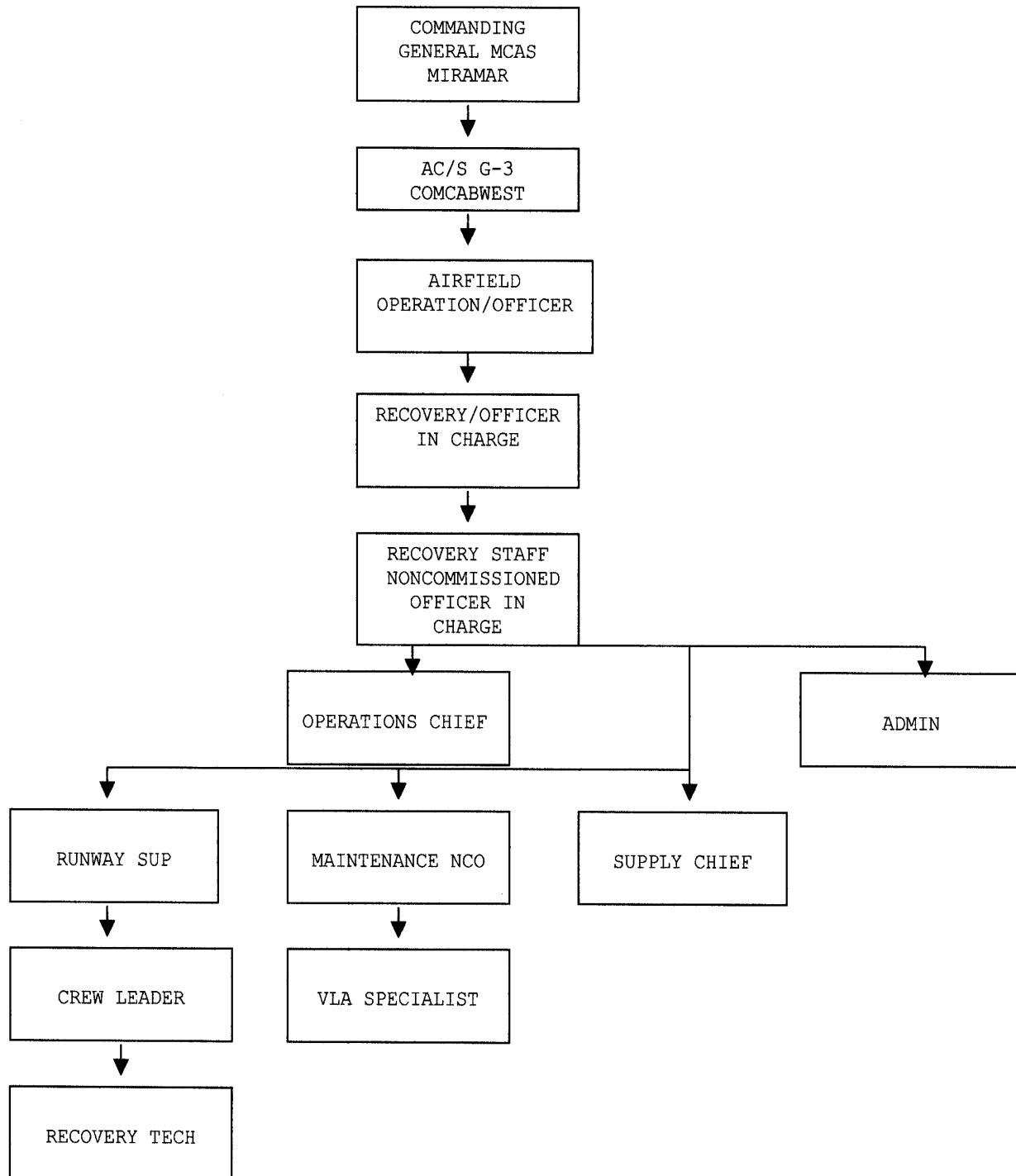


FIGURE 1-1

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CHAPTER 2

RESPONSIBILITIES AND DUTIES

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CHAPTER 2

RESPONSIBILITIES AND DUTIES

2000. GENERAL. This chapter delineates the responsibilities and duties of all Marines assigned to the Aircraft Recovery Division. This chapter is to be used as a guide to ensure the Aircraft Recovery Division is properly managed so that mission(s) can be safely and adequately met.

2001. RECOVERY OFFICER. The Recovery Officer is responsible to the Airfield Operations Officer for:

1. Providing emergency aircraft arrestment services and equipment capable of stopping high performance aircraft with maximum safety to personnel and aircraft.
2. Maintaining the operational readiness and performance of the Recovery Division.
3. Coordinating technical supervision of the Recovery Division and equipment.
4. Initiating and supervising technical training for all Recovery Marines.
5. Exercising authority to execute policy instructions in accordance with applicable directives.
6. Advising the Airfield Operations Officer of the overall effectiveness of the Recovery Division with respect to its capability to accomplish its mission.
7. Maintaining direct liaison with other branches within the Airfield Operations Department to facilitate the accomplishment of the Recovery mission.
8. Ensuring that the Airfield Operations Officer is notified of any situation, which may require a decision above that of the Recovery Officer.
9. Make personnel assignments within the Recovery Division.
10. Perform the functions of Division Officer in accordance with reference (a).
11. Maintain a turnover folder as described in Appendix A.

12. Perform evaluations (Pro/Con marks and Fitness reports) on all Recovery Personnel.

2002. RECOVERY NCOIC. The Recovery NCOIC is responsible to the Recovery Officer for:

1. Operation and maintenance of all arresting gear and Optical Landing Systems in accordance with references (a) through (e).
2. Supervise all phases of Aircraft Recovery operations to include maintenance, administration, training and supply.
3. Plan, schedule and direct the work assignments of the Recovery Marines.
4. Keep abreast of all published instructions, service bulletins and changes and recovery bulletins pertaining to arresting gear and optical landing systems ensuring that they are current, complete and in accordance with directives and established policies of senior echelons of command.
5. Advise the Recovery Officer if emergency arresting gear or optical landing systems are inoperative for any reason, giving nature of discrepancy and an estimated time frame that gear will be inoperative.
6. Monitor technical training to ensure that all Marines are trained and qualified to meet the operational commitments of the Recovery Division.
7. Ensure all required military training is accomplished.
8. Maintain close surveillance on matters appearing in the permanent log of operations.
9. Schedule all annual inspections as outlined in reference (g).
10. Maintain liaison with the Naval Air Warfare Center (NAWC) Expeditionary Airfield Service Unit (EASU) field technicians.
11. Perform and maintain monthly counseling on all Recovery personnel.
12. Submit recommended semiannual proficiency and conduct marks (Cpl and below) and make recommendations on fitness reports (Sgt and SSgt) to the Recovery Officer as required.
13. Ensure maintenance requirement cards (MRC's) are used when performing maintenance on all arresting gear and optical landing systems.

14. Rigidly enforce all applicable safety regulations.
15. Prepare and submit the Quarterly Runway Arresting Gear Engagement Report to the Recovery Officer as outlined in reference (f), as required.
16. Prepare and submit other reports as required.
17. Ensure adequate personnel, equipment and parts/supplies are on hand to support all assigned equipment and to meet requirements of existing instructions.
18. Maintain a turnover folder as described in Appendix A.

2003. OPERATIONS CHIEF. Assist the Recovery NCOIC in the performance of duties and assume those duties when required. In addition:

1. Coordinate and supervise the day-to-day Recovery Operations.
2. Maintain close liaison with the Recovery Crew Leader on all scheduled maintenance.
3. Maintain custody control over all equipment assigned to the Recovery Division and conduct a quarterly inventory of assigned equipment.
4. Keep abreast of all service bulletins, service changes, and Recovery Bulletins pertaining to arresting gear and optical landing systems.
 - a. Ensure all service changes and bulletins received from Naval Air Systems Command and Naval Air Warfare Center (NAWC) are adhered to.
 - b. Ensure all service changes are incorporated in the required systems and records.
5. Advise the Recovery NCOIC when an emergency arresting gear or optical landing system is out of service for any reason. Give the nature of the discrepancy and approximately how long the equipment is expected to be out of service.
6. Keep up-to-date maintenance, and operational service logs on all arresting gear, optical landing systems, and support equipment.
7. Maintain liaison with Squadron Training (S-3) and monitor the following areas of military training ensuring 100 percent completion by the end of the appropriate fiscal or calendar year.
 - a. Basic Warrior Skills Training
 - b. Rifle Range

- c. Pistol Range
 - d. Water Survival
 - e. Leadership Training
 - f. Driver Improvement
 - g. Physical Fitness Test
 - h. Remedial PT/Military Appearance/Weight Control Program
 - i. Nuclear/Biological/Chemical Defense
8. Ensure compliance with the monthly, quarterly and annual technical training and essential military subjects schedules.
 9. Submit a quarterly technical training schedule to the OIC/NCOIC on the 25th day of the month.
 10. Submit an annual training schedule to the OIC/NCOIC 10 workdays prior to the beginning of the new calendar year.
 11. Monitor the licensing program ensuring all Marines acquire a 1-1/4 ton commercial license and emergency vehicle certification as a minimum. Noncommissioned Officer's and above are required to be properly licensed on all vehicles and Support equipment assigned.
 12. Be responsible for the overall maintenance of the buildings and grounds within the Recovery facilities.
 13. Coordinate with Facilities Management Department on all required repairs to the Recovery facilities.
 14. Ensure weekly truck inspections are conducted and ensure corrective action needed is taken.
 15. Supervise all Marines assigned additional duty to ensure compliance.
 16. Enforce all applicable policy letters as required.
 17. Supervise all daily musters and inspections during weekdays.
 18. Ensure Material Control schedules salvage runs as required.
 19. Screen all maintenance forms for completeness, corrective action and inspector sign off.
 20. Perform the duties of Runway Supervisor as required.

21. Perform the duties of Work Center Supervisor in accordance with reference (a):

a. Ensure all the requirements of references (a) through (g) and Maintenance Requirement Cards are met.

b. Submit the Quarterly Maintenance Schedule to the OIC at the beginning of each quarter.

c. Submit the Weekly Maintenance Schedule to the OIC each week.

d. Submit the Quarterly RAR report to the OIC at the end of each quarter.

e. Ensure that all scheduled maintenance is completed.

22. Requisition overhauled cells for Fresnel Lens indicator assembly (36M-1) every 36 months.

23. Maintain a turnover folder as described in Appendix A.

2004. MAINTENANCE NCO. Assist the Operations Chief in the performance of duties and assume those duties when required. In addition:

1. Ensure that all maintenance on all arresting gear and optical landing systems is performed as per references (a) through (e).

2. Maintain close liaison with the Operations Chief on all scheduled maintenance performed and monitor the VLA Specialist.

3. Inspect and initiate repairs on the following:

a. E-28 Emergency Arresting Gear

b. MK-8, Mod-1 Fresnel lens

c. MK-2, Mod-2 MOVLAS

d. PAPI

e. All vehicles in conjunction with Central Motor Pool.

4. Enforce the tool control program and ensure that proper protective and safety equipment is used.

5. Ensure all Recovery equipment is painted and marked in accordance with applicable safety codes.

6. Indoctrinate all assigned Marines with limited E-28 recovery experience.

7. Maintain a turnover folder as described in Appendix A.

2005. SUPPLY CHIEF. The Supply Chief is designated by the Recovery OIC and works under the direct supervision of the Operations Chief. The Supply Chief shall be proficient in materiel supply matters to the extent that duties and responsibilities are carried out, which include:

1. Familiarization with Military Standard Requisitioning and Issue Procedures (MILSTRIP)/Military Standard Transaction Reporting and Accounting procedures (MILSTRAP) and Marine Corps Integrated Maintenance Management System (MIMMS) procedures.
2. Requisitioning of supplies and materials required for the proper support of the Aircraft Recovery Division and the distribution of such materials.
3. Maintaining close liaison with the Fiscal Officer when required to ensure that funds expended do not exceed the authorized budget allowance and to request additional funding as required.
4. Submitting form DD-1348 and applicable open purchase documents to the Recovery Officer when ordering supplies for initial approval.
5. Maintaining a running ledger of funds expended, description of items ordered, quantity, purpose and estimated cost.
6. Maintaining a current inventory of all equipment accountable, and ensure a complete inventory is held at the beginning of each quarter. Report status to the Operations Chief.
7. In every instance where an item has been ordered, but not received within 30 days, submit a follow-up inquiry.
8. Make and monitor all Serv-Mart runs and expenditures, keeping adequate amounts of office supplies and tools on hand.
9. When Marines check in for duty with the Recovery Division, the Supply Chief must make out a custody card, noting thereon all items issued (i.e., sound suppressers, safety boots, coveralls, and protective clothing). All accountable items will be recovered by the Supply Chief prior to transfer of the Marine.
10. Provide the Recovery OIC a monthly report of budget expenditures.
11. Mark, tag, and identify all Recovery equipment.
12. Update all Equipment Custody Receipts (ECR) cards on a quarterly basis.

13. File and retain all inventory results.
14. Submit recommendations to the OIC concerning the composition of program objectives memorandum (POM), midyear review and fiscal year budget requirements, and any other required budget submissions as necessary.
15. Maintain a complete stock of all common and special tools as required by references (a) through (e).
 - a. Maintain tool control master inventories of all tools by assignment and location, i.e., Crew Tool Box, Maintenance Tool Box, and spares in storage.
 - b. Perform inventory spot checks on all tool containers quarterly.
 - c. Ensure all tools requiring calibration are kept current.
16. Be responsible for issuing special tools to Recovery Marines.
17. Be responsible for the upkeep and security of all Recovery power tools.
18. Set up appointments and make salvage runs.
19. No approval will be given to anyone requesting use of government tools for other than Recovery functions without the Recovery Officer's approval.
20. Submit a properly completed DD 1348-1 to the Recovery Officer for approval of all items being turned in to the Defense Reutilization Marketing Office (DRMO or salvage).
21. Maintain a turnover folder as noted in Appendix A.

2006. ADMINISTRATION. The Administrative Section is under the supervision of the Recovery Officer/NCOIC and is responsible for:

1. Preparing all correspondence from the Aircraft Recovery Division.
2. Maintaining close liaison with the Squadron Administration Officer, through Airfield Operations, in matters pertaining to duty assignments, leave, disciplinary matters, inspections and matters affecting the status of the individuals assigned.
3. Maintaining an up-to-date "Read Board" and a complete file on pertinent directives.
4. Maintaining personnel folders and individual training records on Recovery Marines, ensuring that they are updated at least quarterly.
5. Maintain a filing system in accordance with applicable directives.
6. Pickup guard mail at Airfield Operations and HQHQRON twice daily.
7. As changes occur, update the personnel control, training, and reports boards.
8. Maintain a current Technical Publications Library.
9. Prepare all reports as necessary and submit to the NCOIC.
10. Maintain current and up-to-date logs and records on all arresting gear and optical landing system.
11. Prepare the Status Report and the Morning Report daily, Monday through Friday, and submit them to the Airfield Operations Officer via the NCOIC and OIC no later than 0800 daily.
12. Maintain a sufficient quantity of administrative supplies.
13. Maintain a turnover folder as noted in Appendix A.

2007. VLA SPECIALIST. The VLA Specialist is under the supervision of the Maintenance NCO and is responsible for:

1. Performing all scheduled and unscheduled maintenance of all Visual Landing Aids assigned to this section.
2. Reporting to the Maintenance NCO any instance that the landing aids are out of service, giving the reason and estimated time until the unit can be placed in service.
3. Maintain a turnover folder as noted in Appendix A in conjunction with the Maintenance Clerk.

2008. RUNWAY SUPERVISOR. Assist the Operations Chief in the performance of duties and assume those duties when required. In addition:

1. Maintain close liaison with Maintenance NCO, Supply Chief and Admin to ensure parts, equipment, and tools are sufficiently available to the duty and Day Crews to perform required maintenance.
2. Coordinate and supervise the day-to-day functions between the duty crew and day section.
3. Formally post the on-coming/off-going Crew Leaders and ensure they carry out assigned duties.
4. Report to the Operations Chief when an emergency arresting gear or optical landing system is out of service for any reason. Give the nature of the discrepancy and approximately how long the equipment is expected to be out of service.
5. Conduct weekly truck inspections and ensure corrective action needed is taken.
6. Conduct an area inspection at 0730 each Friday and ensure corrective action needed is taken.
7. Perform the duties of the Maintenance NCO as required.
8. Make a physical check of all arresting gear and runway surfaces within 1000 feet in each direction along with optical landing systems on the airfield biweekly.
9. Maintain a turnover folder as noted in Appendix A.

2009. CREW LEADER. Crew Leaders are directly responsible to the Runway Supervisor for the operational readiness of all assigned Marines, equipment and Recovery facilities, during the assigned watch period of the Duty Crew. The tour of duty for the Crew Leader is 0600-0559. The crew will be on deck 1 hour prior to the airfield opening until the field is closed on all days the airfield is operational or as directed by the NCOIC. When the airfield is closed, the duty crew will be on a 30 minute recall. Upon assuming the duties, the Crew Leader will:

1. Ensure that all hand held radios assigned to Recovery are available for use on the airfield and signed out to individual crewmembers.
2. Inventory crew tool box daily and report discrepancies to the Runway Supervisor. Turn completed forms into the Supply NCO.

3. Conduct personnel inspections of all crewmembers ensuring they meet all grooming and uniform regulations prior to posting them on duty.
4. Effect personnel assignments ensuring that their crew is properly briefed and they fully understand their duties and responsibilities.
5. Take charge of any arrestment until relieved by a cognizant senior.
6. Supervise and conduct a complete radio check prior to the airfield opening, ensuring that correct radio procedures are used at all times.
7. Ensure that at least four Marines and one vehicle are on standby in the work area at all times during the tour of duty.
8. Ensure that the radio is monitored at all times by the crew leader or next senior Marine during emergencies or while working in the vicinity of the airfield.
9. Conduct a daily pre-operational inspection (using applicable MRC's and inspection sheet) on all recovery vehicles, all emergency arresting gear, optical landing systems and generators assigned.
10. Set optical landing systems at proper range setting for daily and nightly flight operations prior to the airfield opening and adjust as weather dictates. Secure lenses when airfield closes.
11. Report to the Runway Supervisor, Operations Chief or NCOIC daily at 0730 and 1300, Monday through Friday, for briefing on any problem areas or incomplete work assignments.
12. Perform daily preventive maintenance in accordance with MRC's for all arresting gear, generators, optical landing systems and vehicles.
13. Ensure that all recovery vehicles are cleaned thoroughly inside and out daily, and used for official business only.
14. Ensure that all maintenance is performed by the duty crew in accordance with references (a) through (e).
15. Maintain a neat, concise and accurate log of all activities. Spaces in the official logbook will be used in chronological order with no lines left blank. All erroneous entries will be lined out with a single line and the person making the entry will initial it. White out will not be used and pages will not be torn from the logbook.
 - a. The following will appear at the top of each new day:
 - (1) OIC
 - (2) NCOIC

- (3) Crew Leader
- (4) Assistant Crew Leader
- (5) Duty Runway

16. Log all arrestments on emergency arresting gear to include the following information:

- a. Time of arrestment
- b. Arresting Gear Number
- c. Aircraft Type/MODEX
- d. Aircraft weight at time of arrestment (in pounds)
- e. Estimated engagement speed (in knots)
- f. Runway/overrun condition (wet or dry)
- g. Landing or aborted takeoff
- h. Off center engagement distance (in feet) at point of engagement
- i. Aircraft run out (in feet)
- j. Off center distance at point of rest
- k. Time (in minutes) required to return gear to battery position
- l. Time runway reopened

17. Prior to securing the Crew Leader will:

- a. Inspect the Recovery building and immediate vicinity for proper state of police and acceptable state of orderliness.
- b. Ensure the following equipment is secured:
 - (1) All "up status" arresting gear: in battery, engines secured.
 - (2) Lens: Power secured, all compartments closed and brakes set.
 - (3) Generators: Engine shut down, compartments closed and brakes set.
 - (4) Recovery Vehicles: Lights, radios and engines secured, cab and bed cleaned and keys secured. Vehicles topped off with fuel at 2000 Fuel Farm.

(5) Recovery Building: Radios off, lights out, windows and doors locked.

18. In the event of any mishaps involving any Recovery equipment or Marines, notify the Recovery Officer and NCOIC as soon as possible.

19. Maintain a turnover folder as noted in Appendix A.

2010. RECOVERY TECHNICIANS. Recovery Technicians will be assigned to a Duty Crew or as Day Personnel and are responsible for the following:

1. All Duty Crew personnel will muster at 0600 the first working day of the week for a personnel inspection, training, and to pass word.

2. Normal working hours for Recovery Marines are:

a. Day Personnel: 0730 to 1630, Monday through Friday.

b. Duty Crew: This tour of duty is for a minimum 24-hour period commencing at 0600. The crew may secure to their quarters when the field closes but will remain on a 30 minute stand-by until the next crew assumes the duties. The Duty Crews will rotate day on, day off, and every other weekend or as directed by the NCOIC.

3. All Marines are responsible to the Recovery Officer for the safety of themselves and their fellow Marines. All Marines are strictly charged to adhere to all safety procedures, prevent or correct all unsafe acts and will report all unsafe conditions and safety hazards through the chain of command until the situation is corrected.

4. Crew members are directly responsible to their respective Crew Leader for their conduct and performance.

5. All assigned Crew Tool Control personnel will inventory assigned tools prior to and after completion of each maintenance action. The Crew Leaders and Runway Supervisor will be immediately notified of any missing tools.

6. All Marines on the Duty Crew will respond to all emergencies when the possibility of an arrestment exists while on duty and shall respond to all recalls, as so ordered by the senior Marine on duty. Day duty Marines will muster in the Recovery Building for assignment if required.

7. Aircraft mishaps and incidents are sensitive and are highly visible in nature. The following regulations shall apply with strict conformance by all Recovery Marines.

a. Recovery Division Marines are not authorized to release any information on emergency aircraft or aircraft mishaps. Military personnel requesting information will be referred to the Airfield Operations Officer. Civilian personnel requesting information will be referred to the Public Affairs Officer or their designated representative.

b. Security at a mishap site is the responsibility of the Military Police. Should Recovery Marines be required to serve in this function until the Military Police arrive, they will be polite, yet firm, and all efforts expended to preserve the accident scene in its original condition.

8. Any individual that is issued equipment for their use, and that willfully or through negligence damages, destroys or loses such equipment, shall be held responsible under the UCMJ.

9. All Marines will be provided with the opportunity to attend off duty education, but are cautioned that should courses interfere with unit operations, the unit's mission will have priority.

10. All Marines are required to become knowledgeable in the contents of this order and sign a statement acknowledging that they have been so instructed.

11. Each Marine has a responsibility to notify the appropriate superiors of any circumstance, which may affect their performance in a negative manner.

12. Each member is responsible for ensuring that they have in their possession a current driver's license, Airfield Drivers card, EVOC license and Vehicle Backing Regulations Card while in a duty status.

2011. PROHIBITED BEHAVIOR. Recovery Marines are expected to conduct themselves in a safe, professional manner at all times, on and off duty. Horseplay is strictly prohibited at any time. Hazing and other forms of conduct that are degrading and disrespectful of a Marine's basic dignity will not be tolerated. Marines suspected of hazing another Marine, or participating in horseplay or careless behavior that results in a Marine being injured or damage to property will be prosecuted and, if found guilty, punished to the fullest extent possible.

SOP FOR AIRCRAFT RECOVERY DIVISION

CHAPTER 3

ARRESTMENT AND RESPONSE PROCEDURES

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SOP FOR AIRCRAFT RECOVERY DIVISION

CHAPTER 3

ARRESTMENT AND RESPONSE PROCEDURES

3000. GENERAL

1. To adequately train Marines, basic standardized procedures are established and training conducted to follow such procedures with the projected result of a safe and efficient Aircraft Recovery Division.
2. The Aircraft Recovery Division will be organized into two watch standing sections. The duty crew will maintain an alert status at all times during airfield operating hours regardless of their location aboard the Air Station.

3001. DECLARED IN-FLIGHT EMERGENCY

1. The Recovery Division is notified by means of the Crash Alarm System of an aircraft that has declared an emergency while in flight. Recovery Marines on the airfield will be notified by the ARFF dispatcher/tower over the emergency services net (141.1MHz). After an alarm has been received, the most direct route with the best travel conditions should be used. The speed of the vehicle in response to an emergency must be that which the vehicle can respond and maneuver safely. ARFF vehicles and aircraft will be given the right of way. Vehicle sirens will be used when the response path to an emergency is other than a taxi way or runway. The light bar will remain on for the duration of the emergency.
2. The Duty Crew will proceed to the designated landing runway E-28 arresting gear and receive/request the following information from the tower:
 - a. Aircraft type
 - b. Type of emergency
 - c. Arrestment intentions
 - d. Landing runway
 - e. Estimated engaging speed in knots
 - f. Aircraft weight
 - g. Aircraft distance and time of arrival

3. Recovery crew will give priority to ARFF vehicles and equipment responding to an emergency. ARFF will have radio transmission priority.
4. Recovery response will terminate if notified that the emergency aircraft does not intend to make an E-28 arrestment. The crew will then stand-by at a neutral location until the emergency is secured.
5. Recovery Marines will only respond to emergencies involving tail hook equipped aircraft.
6. The crew will drop off the Point man at a designated location. If aircraft has engaged the gear, No action by Recovery will be taken other than signaling pilot to hold until directed to do so by the ARFF on-scene Commander using the hand and arm signals outlined in NATOPS Manual, NAVAIR 00-80T-11s.
7. The rest of the crew will proceed to the arresting gear. If time permits:
 - a. Crew Leader/Safety NCO will ensure the gear is in the "battery" position.
 - b. Crew Leader will get clearance for Engine Operator to cross runway to check far side engine.
 - c. Crew Leader/Safety NCO will ensure the runway is clear.
 - d. Engine Operators will start the retrieve engines.
 - e. Engine Operators will disconnect "Arm/Disarm" light cable.
 - f. Engine Operators will give Crew Leader gear status, up/down by hand and arm signals or over the FM (Radio).
8. In the event the emergency aircraft does not engage the arresting gear the Crew will stand by for further information to determine whether:
 - a. The aircraft will execute a normal roll.
 - b. Aircraft will wave-off and attempt a second arrestment.
 - c. The aircraft will take the long field gear.
9. In the event the aircraft engages the arresting gear, the Crew will perform post-arrestment procedures as follows:
 - a. Point man: The Point man will stand clear until the ARFF On-Scene Commander turns control over to him/her. After control is given:
 - (1) If aircraft hook is still engaged, the Point man will give the pilot the signal "Brakes Off" as outlined in NATOPS Manual, NAVAIR 00-80T-115.

(2) Then he/she will give the engine operators the signal "Retract" gear.

(3) Once the aircraft starts to roll back he/she will give the Engine Operators the signal to "Cut."

(4) Once the hook is clear he/she will give the pilot "Up Hook" and direct the aircraft to taxi back to the line.

(5) The Point man will then give the Engine Operators the signal to "Retract."

(6) The Point man will then walk tape and cross deck pendant back to battery position, checking for FOD, and tape or deck pendant damage, and removing any twists in the tape.

(7) The Point man will report the aircraft run out distance to the Crew Leader.

b. Crew Leader: The Crew Leader will act as the safety coordinator for all arrestments and:

(1) Maintain contact with the Aircraft Control Tower at all times.

(2) Monitor any unsafe conditions.

(3) Provide assistance to Point man and Engine Operators as needed in the safe operation of the arresting gear.

(4) Once gear is back in battery, give signal to Engine Operators to tension gear and check gear for damage and runway for FOD.

(5) The Crew Leader will complete the arrestment report and enter the arrestment information into the logbook.

c. Deck Coordinator: The Deck Coordinator (DC) has the responsibility of safely returning the gear back to battery position, and maintaining radio communication with ground control at all times. He/she also directs the actions of the engine operators. Once the Point man assumes control of the arrestment/emergency, the deck coordinator will:

(1) Signal to the point man that both engine operators are ready.

(2) Mirror the retract and cut signals from the Point man to the engine operators.

(3) Observe the purchase tape and deck pendants during retraction for any damage or unusual occurrences (twists).

(4) Once the cross deck pendant (CDP) has safely been returned to the battery position, a brief yet thorough inspection of the CDP will be conducted by the DC.

(5) The DC will supervise the repositioning of the deck pendant supports.

(6) If the situation is multiple arrestments, the DC will get a thumbs up from both engine operators, clear the runway and give the tower a "clear and ready deck." If not a multiple arrestment situation, the DC will ensure that both engines are secured, PTWS is connected, clear the landing area and return the deck to ground control.

d. Engine Operator: The Engine Operators will take all signals, and directions from the Deck Coordinator. They are responsible for the following:

(1) Reset cam on absorber engine when reel movement ceases, and then bring the cam follower around to the release post by slowly engaging the clutch. Use caution to prevent any tension being placed on the tape until given the "Retract" signal.

(2) After being given the signal to "Retract," Engine Operators will engage the clutch and retract the gear; watching for the "Cut" signal from the Point man.

(3) After the aircraft is clear of the cable, the Point man will give the signal to retract the tapes.

(4) Engine Operators will retract gear together, watching tape for wear and any unsafe conditions and taking commands from the Crew Leader on when to tension deck pendant.

(5) After tape is retracted they will help reset donuts and do post operational check on gear to include reconnecting the pretension warning light cable.

3002. EMERGENCY LONG FIELD ARRESTMENTS

1. An aborted takeoff, aircraft braking failure or a hook skip at the short field gear may result in an emergency long field arrestment. Normally when this occurs the aircraft has already made the arrestment prior to the arrival of the Recovery Crew.

2. Emergency long field arrestments into the E-28 gear will be handled the same as declared in-flight emergencies, with the exception that the aircraft may already be in the E-28 gear.

3003. PRECAUTIONARY ARRESTMENTS

1. Precautionary arrestments are to be handled in the same manner as declared in-flight emergencies with the exception that ARFF will not take control of the aircraft.

2. If the aircraft shuts down while in the arresting gear, the Control Tower and ARFF will be notified immediately by the Point Man. Recovery personnel will standby until the aircraft has been cleared of the deck pendant.

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CHAPTER 4

COMMUNICATIONS

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SOP FOR AIRCRAFT RECOVERY DIVISION

CHAPTER 4

COMMUNICATIONS

4000. RADIO NET. The radio frequency 141.1Mhz is a universal frequency for specific use of airfield emergency service providers. The network is for mobility and emergency communications and is not to be used for industrial purposes.

4001. RADIO PROCEDURES. Common courtesy is a vital factor in radio communications in order that a smooth flow of radio traffic can be maintained. The following instructions apply to personnel using radios:

1. Make transmissions clear, short, and to the point.
2. Do not interrupt other transmissions. Wait until frequency is clear before making transmissions.
3. Maintain radio silence during emergencies.
4. Monitor radios at all times when operating on the airfield, flight line, or responding to an emergency.
5. Do not use radio for conducting personal business. This is strictly prohibited.
6. Offensive language, joking and horseplay on the radio are strictly prohibited.
7. Request for clearance will be in the following format:

 "Miramar ground, (call sign), request clearance to cross runway __, at __."
8. Once a vehicle has cleared an active surface, notification to tower will be in the following format:

 "Miramar ground, (call sign), clear of runway."
9. At no time will a vehicle be on the airfield without radio communication.
10. Vehicles that experience radio failure shall use the perimeter roadway when proceeding to or from the south side of the field. Report radio failures to Operations Chief.

4002. RADIO MALFUNCTIONS. Preventive maintenance must be conducted on all radios on a monthly basis by the Electronics Maintenance Division (EMD). Aircraft Recovery Marines will not make any adjustment on FM radios and will ensure that water does not come in contact with receivers, transmitters, or junction boxes during vehicle washing.

4003. RADIO ACCOUNTABILITY. In order to ensure strict accountability of all radio equipment, the following actions will be taken:

1. The Operations Chief shall be notified each time a portable or vehicle radio is turned in or serviced by EMD.
2. All communications equipment will be inventoried monthly and the results will be turned in to the Operations Chief.
3. Turn in and reissue of radios must be accompanied by a custody record showing serial numbers and model numbers. Turn in the custody record to the Operations Chief.

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CHAPTER 5

DESTRUCTIVE WEATHER PHENOMENA

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CHAPTER 5

DESTRUCTIVE WEATHER PHENOMENA

5000. GENERAL. The duty Crew Leader or his/her assistant, upon receipt of notification from the Weather Division or Operations Duty Officer that a hazardous weather condition is in effect, will take the following action:

1. Alert all duty Marines concerning the hazardous weather conditions and establish readiness conditions as per reference (j).
2. Secure all nonessential married Marines to their quarters. Secure all Marines and vehicles as required.
3. Tie down all loose equipment and secure all building windows.
4. When the "All Clear" has been given, the Operations Chief or duty Crew Leader will make an operational check of all arresting gear systems, lenses, vehicles, buildings and other section equipment. A damage report will be given to the NCOIC upon completion of the inspection.

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CHAPTER 6

REGULATION OF MEDICATION, NARCOTICS, AND ALCOHOLIC BEVERAGES

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SOP FOR AIRCRAFT RECOVERY DIVISION

CHAPTER 6

REGULATION OF MEDICATION, NARCOTICS, AND ALCOHOLIC BEVERAGES

6000. GENERAL. For the protection and safety of all Recovery Marines and the aircrews we serve, it is of paramount importance that all duty Marines be at full mental and physical strength; therefore, the following regulations and instructions governing medications, narcotics and alcoholic beverages is provided:

1. Prescription Medication. Medications are routinely dispensed by the Dispensary for various medical reasons. These medications in most circumstances, would not impair a Marine's ability to perform his/her mission. Recovery Marines operate equipment in a highly volatile environment, where even the mildest medication can negatively influence the critical balance of mental and physical abilities needed to operate the Arresting gear. Should any Recovery Marines be administered medications, they will:

a. Notify the Medical Officer prescribing the medication that they work on the airfield and operate emergency equipment.

b. Obtain a medical chit as to whether the medication will/will not interfere with the Marine's duties.

c. Bring the Medical Officer's recommendations to the NCOIC. The NCOIC will then review the document, assign the individual to the appropriate duties, notify the appropriate personnel, and enter the medical chit in the individuals training record.

2. Unauthorized Narcotics/Drugs. The possession, use or sale of unauthorized narcotics/drugs (other than those prescribed by a competent medical authority for a specific person), controlled substances or paraphernalia is strictly prohibited.

3. Unauthorized Medications. Many over-the-counter medications are available through civilian sources. Although not a narcotic or other controlled substance, these medications possess the ability to alter the physical and mental capabilities of the person using the medication. It is reemphasized that the only medication authorized for Recovery Marines to consume are those prescribed by a Medical Officer, and that the NCOIC, Operations Chief, Maintenance NCO and crew leaders have been informed of such medication so that appropriate duties may be assigned.

4. Alcohol. The consumption of alcoholic beverages during the performance of assigned duties is prohibited. The hours of duty are regulated by the Recovery Officer and can be either verbal or written. At no time will alcoholic beverages be consumed 8 hours prior to being in a duty status, regardless of the duties assigned.

5. Competence For Duty Examination NAVMED Form 6120 Series. Should, a Recovery Marine while in the performance of his duties, have cause to suspect that the physical or mental capabilities of another Recovery Marine is impaired due to the suspected influence of narcotics, alcohol or medication, it will be immediately reported to the Marine's superior. Notification of superiors will be accomplished regardless of time of day. The senior Marine on duty will complete the NAVMED Form 6120 retaining one copy for file, then have the Marine escorted to the Dispensary and report back to the Recovery Division with the results for appropriate action.

SOP FOR AIRCRAFT RECOVERY DIVISION

CHAPTER 7

SAFETY PRECAUTIONS

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CHAPTER 7

SAFETY PRECAUTIONS

7000. PURPOSE. The purpose of this section is to familiarize all Marines with the safety precautions that shall be adhered to when operating, maintaining, or overhauling Recovery equipment. This section is not to be construed as totally inclusive. Recovery Marines will refer to the appropriate Manual, Maintenance Requirement Card, or this Order for detailed safety information.

7001. GENERAL. The arrestment and recovery of aircraft involves many constant existing hazards. Careful installation, maintenance, and inspection of arresting gear, lenses, and coordination of personnel and equipment are of prime importance. Key personnel engaged in the operation of arresting gear must be thoroughly trained and conversant with its operation and characteristics. Safety is the result of trained personnel knowing and performing their duties to the best of their ability. Disregard for safety will create hazards and potential dangers. Attention to every detail and awareness of each malfunction will greatly reduce the possibility of accident due to improper operation. The safety precautions in this section shall be observed by all personnel, and by any other persons in the arresting gear area.

NOTE: Copies of the following lists shall be posted in conspicuous locations to enable all Marines to become thoroughly familiar with all safety precautions.

7002. E-28 GEAR SAFETY PRECAUTIONS

1. Ensure unit is in operational readiness condition.
2. Keep fire equipment in accessible location.
3. Ensure all pre-operational inspections have been completed.
4. Do not anticipate commands.
5. Keep all unnecessary personnel clear of area.
6. Never run engine with governor disconnected or operate at engine speeds in excess of 2400rpm (37hp) or 3000rpm (65hp).
7. Do not attempt any equipment adjustments or repairs during operations.
8. During arrestment all personnel should stand clear of area that could be endangered by backlash should tape or pendant fail.

9. Stand clear of tapes and pendant during retraction.
10. Ensure retract is steady.
11. After pre-tensioning, walk around the tape reel and visually inspect the tape to ensure it has not slipped to the edge or under the lower flange.
12. Correct any unusual operating conditions such as loose components, fluid leaks, and unusual noise.
13. Do not attempt to remove pendants while tapes are pretensioned.
14. Secure retrieve engine before inspecting cooling system.
15. Always reinstall chain guard after chain lubrication and/or adjustment.
16. Reverse tapes only once if reversed for wear.
17. When energy absorber is lifted during overhaul, all personnel should stand clear until it is returned to ground level.
18. Never fill the fuel tank when retrieve engine is in operation or hot.
19. Always refuel slowly to avoid spillage.
20. Never operate retrieve engine in an enclosed area without the exhaust being piped outside.
21. Never make adjustments or repairs on the retrieve system unless clutch is disengaged.
22. Remove ignition cables from spark plugs and disconnect the battery when working on components attached to the engine drive shaft.
23. Do not make adjustments or repairs during aircraft arrestment or pendant retrieval operations.
24. Shut down the retrieve engine before performing any lubrication.
25. Do not start engine with clutch engaged.
26. Never operate engine with air shrouding removed.

7003. FLOLS/MOVLAS SAFETY PRECAUTIONS

1. Do not change parts or make adjustments inside equipment in which high voltage supply is turned on.
2. Under no circumstances should any person reach within equipment for the purpose of servicing or adjusting the equipment without the immediate presence or assistance of another person capable of rendering aid.
3. Personnel working near high voltages should be familiar with the methods for cardio pulmonary resuscitation.
4. Exercise extreme care when selecting brightness settings for datum and wave-off lights. Select the minimum brightness setting that is suitable for ambient light and weather conditions. Once the settings are selected, change brightness settings as conditions change significantly.
5. Do not change brightness settings during aircraft landing.

7004. SAFETY EQUIPMENT

1. When servicing batteries, personnel will wear a face shield, eye goggles, rubber apron, rubber gloves, and coveralls.
2. Sound suppressers or prescribed ear plugs will be worn any time there is a noise hazard.
3. High top, steel toed, safety boots will be worn in maintenance sections and on the airfield.
4. Fire extinguishers, First Aid kits, and eye wash stations or bottles will be located in all Recovery buildings and vehicles, and hazardous material waste and storage sites.
5. Eye Wash stations and Spill Kits will be located at all hazardous material storage or waste sites.

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CHAPTER 8

WET WEATHER BILL

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CHAPTER 8

WET WEATHER BILL

8000. GENERAL. The duty Crew Leader or his assistant, will monitor weather conditions with the Weather section and prepare for the Wet Weather Bill by conducting the following:

1. Ensure that a minimum of six (6) Marines are on crew.
2. Ensure the Marines have their rain gear available and have extra boots and socks upon reporting for duty.
3. Ensure that taxi wands are available in the vehicles for periods of inadequate visibility.
4. Ensure that the fuel tanks of the E-28 arresting gear are reading full. If not, contact the fuel truck.
5. Ensure that all Recovery Vehicles are topped off with fuel.
6. When the Wet Weather Bill goes into effect the primary arresting gear engines will be started and left running, monitoring the fuel level.
7. Brief the Recovery crew on their appointed positions during the Wet Weather Bill, ensuring that dual runway arrestment procedures are completely understood.
8. Ensure the Recovery Crew understands the following:
 - a. There will be six (6) miles between aircraft landing on dual runways.
 - b. The importance of safety, and in a timely manner giving a clear and ready deck back to tower between aircraft arrestments.

NOTE: If we are at minimum manning strength, the crews must understand that there will be no Deck Coordinator present.

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APPENDIX A

TURNOVER FOLDER REQUIREMENTS

1. In order to maintain an efficiently operated unit in an atmosphere of consistently changing personnel, a means of standardizing positions is necessary. The following structure positions are required to maintain a turnover folder:

- a. Officer in Charge
- b. Noncommissioned Officer in Charge
- c. Operations Chief
- d. Runway Supervisor
- e. Supply Chief
- f. Admin
- g. Crew Leader

2. Each turnover folder will contain specific instructions that are used in performance of that particular duty.

3. The following directives shall be maintained as specified by position:

a. Officer in Charge, Noncommissioned Officer in Charge, Operations Chief and Runway Supervisor:

- (1) Table of Contents
- (2) Recall Roster (Recovery)
- (3) Points of Contact
- (4) Airfield Diagram with gear and OLS locations
- (5) Fresnel Lens Survey
- (6) El020 (Equipment List for Arresting Gear and Visual Landing Aids)
- (7) Plant Account Numbers (Retrieve and Absorber Engines)
- (8) Letters of Appointment
- (9) Recovery Policy Letters

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- (10) StaO 13810.1 (SOP for Aircraft Recovery Division)
- (11) Airfield Operations Manual
- (12) NAVAIR Inst 3120.2 (Certification Responsibilities)
- (13) Aircraft Recovery Bulletins #46-12 (E-28) and #80-12 (MK-8, FLOLS)
- (14) NAEC-ENG 7824 (Certification Procedures, E-28)
- (15) NAEC-ENG 7370 (Certification Procedures, FLOLS)
- (16) Tenant Squadrons with contacts and phone numbers
- (17) Quarterly Maintenance Plan
- (18) Desktop Procedures
- (19) On-going Projects

b. Admin and Crew Leader:

- (1) Table of Contents
- (2) Recall Roster (Recovery)
- (3) Points of Contact
- (4) Airfield Diagram with gear and OLS locations
- (5) Fresnel Lens Survey
- (6) Letters of Appointment
- (7) Recovery Policy Letters
- (8) StaO 13810.1 (SOP for Aircraft Recovery Division)
- (9) Airfield Operations Manual
- (10) Locator Sheet: NAVAIR Inst 3120.2 (Certification Responsibilities)
- (11) Locator Sheet: Aircraft Recovery Bulletin #46-12 (E-28)
- (12) Locator Sheet: Aircraft Recovery Bulletin #80-12 (MK-8, FLOLS)

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(13) Locator Sheet: NAEC-ENG 7824 (Certification Procedures, E-28

(14) Locator Sheet: NAEC-ENG 7370 (Certification Procedures, FLOLS) I

(15) Tenant Squadrons with contacts and phone numbers

(16) Quarterly Maintenance Plan

(17) Desktop Procedures

(18) On-going Projects

c. Supply Chief:

(1) Table of Contents

(2) Recall Roster (Recovery)

(3) Points of Contact

(4) Airfield Diagram with gear and OLS locations

(5) Fresnel Lens Survey

(6) E1020 (Equipment List for Arresting Gear and Visual Landing Aids)

(7) Plant Account Numbers (Retrieve and Absorber Engines)

(8) Letters of Appointment

(9) Recovery Policy Letters

(10) StaO 13810.1 (SOP for Aircraft Recovery Division)

(11) Airfield Operations Manual

(12) Quarterly Maintenance Plan

(13) Standard Forms

(14) On-going Projects

4. It is the responsibility of each Marine to become familiar with and update the contents of their turnover folder.

5. The Administrative NCO will ensure that all new or changed directives or policy letters are received by the Marines for incorporation into their turnover folders.

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APPENDIX B

VEHICLE REQUIREMENTS

1. Recovery Division vehicles are required so that the assigned mission can safely and efficiently be performed. Their assigned purpose is listed as follows:

a. Emergency Arrestment Response Truck. These are small, lightweight, multi-drive type, equipped with special/common tools required for arresting gear and lens support.

NOTE: Manual retract cable and fire extinguishers are available at the recovery maintenance work center and are to be used as needed.

(1) Crew Vehicle: Primary mission is to transport the Duty Crew to the emergency arresting gear in the event of an aircraft emergency. A secondary mission is to transport the Duty Crew during daily Pre-operational inspections of all arresting gear and optical landing systems aboard the airfield and assist in the performance of all duties.

(2) Maintenance Vehicle: Primary mission is for response for maintenance personnel as a backup crew or as primary crew if a second emergency is declared. Secondary mission is to support the maintenance crew in the performance of their duties on the airfield.

(3) Command Vehicle: Primary mission is to serve as the NCOIC and Operations Chief's vehicle to ensure mobility in the performance of their duties. Secondary mission is to serve as a backup vehicle for the crew and maintenance vehicles should either vehicle be in a down status for periodic maintenance.

b. Additional Support Equipment

(1) Tow Vehicle: Primary mission is to provide support for scheduled maintenance procedures. Secondary mission is to transport parts and equipment weighing up to several tons as necessary in support of maintenance operations. This vehicle must be capable of disengaging a deadlocked cam of up to 6500 pounds, repeatedly.

(2) Forklift, 10K: Primary mission is to load/unload arresting gear assemblies, subassemblies and components at Recovery work centers and Arresting Gear locations on the airfield in support of maintenance requirements.

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APPENDIX C

ARRESTING GEAR AND FRESNEL LENS OPTICAL LANDING SYSTEM (FLOLS) DESCRIPTIONS AND LOCATIONS

1. E-28 Emergency Arresting Gear Description

a. The E-28 emergency arresting gear is designed as a land based emergency stand-by gear for arresting hook equipped aircraft. The arresting gear is installed on the runway for the purpose of safely arresting an aircraft in the event of an aborted takeoff or an emergency landing. The bi-directional arrestor engine consist of two rotary hydrodynamic energy absorbers connected by a cross deck pendant and are designed to jointly dissipate the kinetic energy of an aircraft.

b. This arresting gear is bi-directional and remains in battery at all times, with the exception of 24R. The short field gear on Runway 24R is derigged except during inclement weather and is on ten minute notice for emergencies.

2. FLOLS Description

a. The portable shore based FLOLS is a trailer mounted electro-optical landing system. By using this system, a pilot may visually establish and maintain a predetermined glide slope angle for landing. All Fresnel lenses are set at a three-degree glide slope.

b. MK-8 Fresnel Lens sites are located on Runways 24L, 24R and 28, approximately 750 feet from the approach end of 24R, 1,064 feet from the approach end of 24L and 1,060 feet from the approach end of Runway 28. There are two MK-8 Fresnel lens installed on Runway 24L. They are located at 1,064 feet and 2,757 feet respectively. The latter is located for use with the simulated carrier deck.

3. MOVLAS Description. The Mk 2 Mod 2 Manually Operated Visual Landing Aid System (MOVLAS) is an emergency signaling system intended to be used when the primary optical landing system is rendered inoperative. As a substitute for the Fresnel lens Optical Landing System, it provides two basic visual displays. The first of these displays is the source light image or "meatball" seen by the pilot when making an approach with the lens system. The second display, "datum," consists of reference datum lights, wave-off lights and cut lights. The source light image is manipulated by an LSO Controller, which controls the movement of the meatball picture up and down the face of the light box.

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4. PAPI Description. The Precision Approach Path Indicator (PAPI) Light Unit consists of a base supporting two identical optical modules. Each module houses a 200 watt lamp positioned at the focal point of a parabolic reflector. Half of the light passes through a glass red filter. The lens positioned at the front of the module is located so that the beams cross over at a position approximately 14 inches in front of the unit. The result is that although the red filters are positioned on top in the unit, the emerging beam as seen from the pilots Point of view, is white on top and red on the bottom providing the pilot with visual cues necessary to obtain a proper vertical glide slope.

5. Arresting Gear and OLS Locations

Gear/ Position/ Numbers	Runway	E-28 Distance From Threshold	Distance from Threshold Pole/FLOLS (In Feet)	Pole Setting for 3 Degrees Glide Slope (In Inches)
#1	24R	2300'	610'/750'	127.5"
#2	06L	9510'	600'/750'	151.75"
#3	24L	2300'	607'/750'	125"
#4	06R	6950'	600'/750'	154"
#5	28	1100'	9101/1060'	136.75"
#6	24L FCLP		2850'/3000'	143"
#7/PAPI	06R		N/A/945'	
#8/PAPI	06L		N/A/945'	